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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/760,682	01/16/2001	Masum Choudhury	A1-057 US	4082
7590	11/03/2004		EXAMINER WANG, GEORGE Y	
Romi Bose MOLEX INCORPORATED 222 Wellington Court Lisle, IL 60532			ART UNIT 2871	PAPER NUMBER

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/760,682

Applicant(s)

CHOUDHURY ET AL.

Examiner

George Y. Wang

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16,18-29,31-39 and 41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16,18-29,31-39 and 41 is/are rejected.
- 7) ☒ Claim(s) 17,30 and 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 17, 30, and 40 are objected to because they are not presented as cancelled claims. Applicant's Response filed May 23, 2003 clearly shows that they have been cancelled. Thus, appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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3. Claims 1-11, 13-16, 18-25, 27-29, 31-39, and 41 are rejected under 35 U.S.C.

103(a) as being unpatentable over Bunin et al. (U.S. Patent No. 5,907,651, hereinafter

"Bunin") in view of Yanagawa et al. (U.S. Patent No. 5,297,228, hereinafter

"Yanagawa").

4. As to claim 1-11, 13-16, and 18-20, Bunin discloses a passive alignment fiber optic connection system (fig. 3) having two connector modules (fig. 3, ref. 24, 32) with a plurality of optical fibers (fig. 3, ref. 36) terminating flush against the connector face (col. 4, lines 29-32). Bunin also teaches at least two projecting pins (fig. 3, ref. 38) with corresponding pin passages (fig. 3, ref. 42) spaced from one another and from optical fibers with predetermined alignment patterns (fig. 4, ref. 54, 60, 100; col. 4, lines 55-58) for center-to-center alignment between connectors. The respective ends of the fibers, which are generally perpendicular to the connector face, are closely spaced (fig. 3) from that of the other connector, whose face is also generally perpendicular to the length of the guides, before fully engaging in contact alignment (col. 2, lines 23-54). Bunin also teaches the use of filler to accommodate fiber waveguides (col. 4, lines 62-65). Lastly, Bunin discloses that the pin passages and projecting pins being precisely sized to eliminate play between the pin passages and the projecting pins when the projecting pins are inserted into the pin passages (col. 7, lines 13-35).

However, Bunin fails to specifically disclose a substrate, which contains no fibers and no grooves for receiving fibers, that serves as an intermediary between the two connector modules. Furthermore, the Bunin reference does not specifically teach a

substrate that is made of two wafers such that one wafer has a plurality of waveguides while the other has a plurality of channels with when assembled together, contains filler to accommodate the waveguides.

Yanagawa discloses an optical waveguide connector with an intermediary substrate module (fig. 5, ref. B2) that contains waveguides that are generally perpendicular to the face of the substrate and no fibers or grooves for receiving fibers. Yanagawa also teaches two wafers, one having a plurality of waveguides (fig. 2) while the other having a plurality for corresponding channels (fig. 1) for assembly.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have sandwiched between two connector modules a dual wafer substrate module containing no optical fibers or grooves for receiving fibers since one would be motivated by a high-reliability connection that can be carried out in a short time (col. 2, lines 2-7). Furthermore, providing a waveguide substrate not only permits ease of connection, but also significantly reduces optical loss (col. 3, lines 11-12). It would have also been obvious to one of ordinary skill in the art at the time the invention made to have used filler for the combination of the wafers in the substrate of Yanagawa as with the connector of Bunin since one would be motivated to hold and fix the waveguides in a proper spaced relationship to facilitate accurate alignment (abstract).

5. As to claims 21-25, 27-29, 31-39, and 41, Bunin discloses a passive alignment fiber optic connection system (fig. 3) and method having two connector modules (fig. 3, ref. 24, 32) with a plurality of optical fibers (fig. 3, ref. 36) terminating flush against the

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connector face (col. 4, lines 29-32). Bunin also teaches at least two projecting pins (fig. 3, ref. 38) with corresponding pin passages (fig. 3, ref. 42) spaced from one another and from optical fibers with predetermined alignment patterns (fig. 4, ref. 54, 60, 100; col. 4, lines 55-58) for center-to-center alignment between connectors. The respective ends of the fibers, which are generally perpendicular to the connector face, are closely spaced (fig. 3) from that of the other connector, whose face is also generally perpendicular to the length of the guides, before fully engaging in contact alignment (col. 2, lines 23-54). Bunin also teaches the use of filler to accommodate fiber waveguides (col. 4, lines 62-65).

However, Bunin fails to specifically disclose a substrate, which contains no fibers and no grooves for receiving fibers, that serves as an intermediary between the two connector modules. Furthermore, the Bunin reference does not specifically teach a substrate that is made of two wafers such that one wafer has a plurality of waveguides while the other has a plurality of channels with when assembled together, contains filler to accommodate the waveguides and where the alignment patterns are etched.

Yanagawa discloses an optical waveguide connector with an intermediary substrate module (fig. 5, ref. B2) that contains waveguides that are generally perpendicular to the face of the substrate and no fibers or grooves for receiving fibers. Yanagawa also teaches two wafers, one having a plurality of waveguides (fig. 2) while the other having a plurality for corresponding channels (fig. 1) for assembly. Yanagawa also discloses a conventional etching method is used to obtain the alignment channels and patterns (col. 3, lines 59-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have sandwiched between two connector modules a dual wafer substrate module containing no optical fibers or grooves for receiving fibers since one would be motivated by a high-reliability connection that can be carried out in a short time (col. 2, lines 2-7). Furthermore, providing a waveguide substrate not only permits ease of connection, but also significantly reduces optical loss (col. 3, lines 11-12). It would have also been obvious to provide alignment channels and patterns by chemical etching process since it will well-known in the art for precise structuring (col. 3, lines 59-68). It would have also been obvious to one of ordinary skill in the art at the time the invention made to have used filler for the combination of the wafers in the substrate of Yanagawa as with the connector of Bunin since one would be motivated to hold and fix the waveguides in a proper spaced relationship to facilitate accurate alignment (Bunin, abstract).

6. Claims 12 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunin and Yanagawa, in view of Applicant's Admission of Prior Art (AAPA).

Bunin and Yanagawa disclose the optical connection system as recited above. However, neither of the references specifically disclose the connection system for use in DWDM products.

AAPA discloses the use of connection systems in DWDM products (pg. 3, line 23 – pg. 4, line 4).

It would have been obvious to one of ordinary skill at the time the invention was made to make use of a connection system in DWDM products since it is well known that in DWDM products, multiplexing can be used to combine channels of different wavelengths with minimum inter-channel cross-talk (pg. 3, lines 13-15).

Response to Arguments

7. Applicant's arguments with respect to claims 1-16, 18-29, 31-39, and 40 have been considered but are moot in view of the new ground(s) of rejection.

Applicant has amended the independent claims removing the negative limitation that "the substrate module is held in place in a fiber optic circuit without the use of adhesives" and to include in claim 1 – "the pin passages and projecting pins being precisely sized to eliminate play between the pin passages and the projecting pins when the projecting pins are inserted into the pin passages," in claim 21 – the alignment patterns "etched into the substrate body using a photolithographic process," and in claim 33 – plurality of aligned respective waveguides "chemically aligned."

As to claim 1, Applicant's main argument is that the Bunin reference does not teach the newly added limitation and that "Bunin actually teaches away from Applicant's invention." Examiner disagrees. The fact that Bunin discloses an alignment bushing and adhesive does not suggest that the reference teaches away. In fact, the bushing and adhesive, which are both a part of the pin passage, serves to provide precise sizing and eliminate play with the pins so that "the bushings are secured at the exact diameters of the alignment posts" (col. 7, lines 23-35). As such, Applicant's conclusion

that “this type of operation inherently introduces inaccuracy in alignment” is not supported in the Bunin reference or anywhere else.

As to claims 21 and 33, Applicant's main argument is that there is “no teaching or suggestion in the cited references that the alignment channels or patterns are etched into the substrate.” Examiner strongly disagrees. First, as to claim 21, even though the product-by-process limitation “etched into the substrate body by using a photolithography process” is recognized as limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). See also MPEP 2113. However, even if the limitation were given patentable, as in the method of claim 33, it is clear that the Yanagaw reference clearly discloses that “a conventional photolithographical method and a convention dry etching method” are used to obtained the alignment channels and patterns (col. 3, lines 59-62; see above rejection).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 571-272-2304. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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gw

October 28, 2004



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